

Religiosity among Muslims: A Scale Development and Validation Study

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Abstract

While religiosity as a field of inquiry has been gaining research interest in recent years, a central issue about its conceptualisation, measurement, and relationships with work outcomes remains unresolved. The aims of this paper are: (1) to introduce a new scale designed to measure religiosity among Muslims, based on an Islamic perspective that centres on the bodily action or human activity (*Islam*), the mind or understanding of God (*iman*), and the spirit or actualisation of virtue and goodness (*ihsan*); and (2) to demonstrate how religiosity relates to various work outcomes. We followed a rigorous multi-steps scale development procedure using four empirical studies involving 703 participants. The final scale yielded one factor with 10 underlying items. Our results showed that religiosity was positively correlated with job satisfaction, positive work behaviour, workplace integrity, and organisational commitment, but negatively correlated with antagonistic work behaviour. This new scale also showed incremental validity over an existing Muslim attitude scale in predicting organisational commitment and integrity. Overall, this new scale demonstrates good psychometric properties and is a promising tool for the measurement of religiosity among Muslims in organisational settings.

Religiusitas pada Muslim: Pengembangan Skala dan Validasi Studi

Abstrak

Meski belakangan ini religiusitas telah mendapatkan perhatian riset-riset, masalah fundamental tentang konseptualisasi, pengukuran, dan hubungan dengan kinerja individu dalam organisasi masih belum terpecahkan. Tujuan dari artikel ini adalah: (1) memperkenalkan skala baru yang disusun untuk mengukur religiusitas pada Muslim di mana ini didasari oleh perspektif Islam yang berpusat pada perilaku atau aktivitas manusia (*Islam*), benak atau pemahaman akan Tuhan (*iman*), dan semangat aktualisasi nilai-nilai dan kebaikan (*ihsan*); dan (2) menunjukkan bagaimana religiusitas bisa berhubungan dengan berbagai kinerja kerja individu. Kami melakukan pengembangan skala lewat beberapa tahapan ketat menggunakan empat studi empiris dengan 703 partisipan. Skala akhir terdiri atas satu faktor dengan 10 aitem. Hasil juga menunjukkan bahwa religiusitas berkorelasi positif dengan kepuasan kerja, perilaku kerja positif, integritas kerja, dan komitmen organisasi, serta berkorelasi negatif dengan perilaku kerja antagonistik. Secara umum, skala baru ini menunjukkan properti psikometrik yang baik dan bisa menjadi instrumen menjanjikan untuk mengukur religiusitas Muslim di lingkungan organisasi.

Keywords: muslim, psychometric, religiosity, scale development, work outcomes

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1. Introduction

Despite its marginalisation by modernity and secularisation, religion remains a central component of individual and society's life (Anderson, 2015). According to a recent survey by the Pew Research Centre (2015), although 1.1 billion of the world's population are now religiously

unaffiliated, most of the world's major religions experience notable growth, with Islam showing the largest increase. Therefore, the impact of religion on human functioning should not be underplayed (Albright & Ashbrook, 2001). For many, the very word “*religion*”

itself connotes “a way of life” (Islam - *al-din*, the Chinese traditional religions - *chiao*, and Shintoism - the *kame* way; Kamaruzaman, 2008) that shapes their followers’ world views and value systems, which impact upon their beliefs and practice. As such, studying how religion is manifested in society is important because it can describe, predict, and explain how people behave in many situations. This is supported by the fact that many studies have demonstrated relationships between religion and physical and mental health (Cox & Verhagen, 2011; Khalaf, Hebborn, Dal, & Naja, 2015); work outcomes (Achour, Grine, Mohd Nor, Mohd Yakub, & Mohd Yusoff, 2015; Roundy, 2009), healthy lifestyle (Hill, Ellison, Burdette, & Musick, 2007; Salmoirago-Blotcher *et al.*, 2011), as well as life satisfaction (Lim & Putnam, 2010; Noor, 2008). These studies have also shown religion to act directly on these outcome variables or that religion may moderate the impact of stress on adverse outcomes by allowing people to change the nature of the stressful experience in certain ways or to use it as a coping strategy.

A large body of research (e.g., Abu-Raiya & Hill, 2014; El-Menouar, 2014; Saroglou, 2010) has been dedicated to exploring how best to measure and quantify an individual’s religion. On the one hand, researchers claimed that this measurement could be gauged simply by asking people which religion they affiliated with (i.e., religious affiliation); while on the other hand, others argued that a more accurate measurement of the construct could be made by examining one’s religiosity (Ahrold & Meston, 2010; Anderson, 2015). Religiosity is a comprehensive sociological term that is used to refer to the numerous aspects of religious activity, dedication, and belief (Freebase, 2016). Recent research on religiosity suggests that the construct can be further described in two ways: (1) the extent to which people are involved in their religion (Whitely, 2009); and (2) the degree to how people integrate religion or refer to the transcendence in their daily lives (Saroglou, 2010). The breadth of these definitions allows for the development of scales to measure religiosity in a more meaningful way; and indeed, various scales have been constructed along this line.

Among the notable measures include the Religious Orientation Scale (Allport & Ross, 1967), the Quest Scale (Batson & Schoenrade, 1991), the Glock-Stark Dimensions of Religiosity Scale (Glock & Stark, 1965), the Religious Fundamentalism Scale (Altemeyer & Hunsberger, 1992), and the Attitudes toward Christianity Scale (Francis & Stubbs, 1987). Comparing the underlying framework of these scales, however, revealed that their items were developed based on psychological perspectives of motivation, attitudes toward one’s beliefs, and existential experience rather than on biblical or theological grounds. Furthermore, while we acknowledged these scales had greatly advanced our understanding of the

complex nature of religion, they were founded on the notion of the Western worldview. With the advent of modern science, the Enlightenment period relegated religion from the public domain to the realm of the private and sought to account for everything in the world using scientific rationalism. This worldview of modern science views people as terrestrial beings, and consequently, happiness is conceived less in cosmic terms and more with respect to satisfying one’s physical needs, desires, and comforts. In other words, the world has become more impermeable to the divine and religion as a communion with God is lost. This argument, thus, provides the main justification for developing a religiosity scale using a framework from Islam that recognises this experience of communion with God.

Nevertheless, the literature on religiosity from Islamic perspective has also produced several versions of what the construct actually entails and how it can possibly be measured. This variation occurs due to the differing conceptualisations that the researchers have used to develop the scales, which may or may not be sufficiently grounded in the Islamic faith. For example, three scales, i.e., the Muslim Attitudes toward Religion Scale (Wilde & Joseph, 1997), the Attitudes toward Islam Scale (Sahin & Francis, 2002), and the Five Dimensions of Muslim Religiosity Scale (El-Menouar, 2014) merely adapt and extend the scales that are based on Christian practices and beliefs (i.e., the Francis and Stubbs’s, 1987; Attitudes toward Christianity Scale and Glock-Stark’s multi-dimensional concept of religiosity, respectively). Whereas another two scales, i.e., the Muslim-Christian Religious Orientation Scale (Ghorbani Watson, Ghramaleki, Morris, & Hood, 2002) and the Islamic Doctrinal Orthodoxy Scale (Ji & Ibrahim, 2007) use secular psychological views of motivation and existential experience rather than a religious perspective as the basis. One exception, however, is the Muslim Religiosity and Personality Index (Hamzah *et al.*, 2006) that conceptualises religiosity as a representative of the *tawhidic* (divine unity) principle. Though this scale has, to some extent, addressed some of the constraints inherent in past scales used to assess Muslims’ religiosity, it does not adequately address aspects that relate to the general understanding and practice of Islam as a way of life because it was initially designed for youth in the context of nation building.

Our review of other Muslim religiosity scales (Table 1) also indicates that the existing scales have issues in relation to four aspects: (1) vague construct conceptualisation due to the practice of developing, adapting, extending, and interpreting the scales within the framework of psychological, Christian, or other Western concepts of religiosity; (2) the focus on religious belief or religious behavioural components only; (3) the problem of inadequate validation and reliability; and (4) the scale length that reduces their usefulness in practical research contexts. For these the development of a religiosity

Table 1. A Summary of Religiosity Scales for use by Muslim Populations

Scale	Authors	Framework	Details	Remarks
The Muslim Attitudes Toward Religion Scale	Wilde and Joseph (1997)	Adapted from the Francis Scale of Attitude towards Christianity (Francis & Stubbs, 1987)	14 items ($\alpha = 0.93$) British Muslims ($n = 50$)	<ul style="list-style-type: none"> +ve: Correlated moderately and negatively with Psychotism factor and moderately and positively with scores on Lie factor. -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.
The Muslim-Christian Religious Orientation Scales	Ghorbani <i>et al.</i> (2002)	Based on Allport's religious motivation	9 items ($\alpha =$ not stated) Iranian university students ($n = 178$)	<ul style="list-style-type: none"> +ve: Associated positively with extrinsic religious orientation, intrinsic religious orientation, and religious interest. Evidence of construct and predictive validity of the scores. -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.
The Attitudes Toward Islam Scale	Sahin and Francis (2002)	Based on Francis and Stubbs's (1987) Attitudes Toward Christianity Scale	23 items ($\alpha = 0.90$) Muslim adolescents in Birmingham, United Kingdom ($n = 381$)	<ul style="list-style-type: none"> +ve: Correlated positively with personal <i>salah</i> (prayer). Positively linked to religious orientation, religious interest, and religious practices. Evidence of reliability and construct validity. -ve: Used young populations, so generalisability to other populations untested. Adapted and extended a Christian instrument or Western concepts to Muslim populations.
The Religiosity of Islam Scale	Jana-Masri and Priester (2007)	Based on the contents of the Holy Qur'ān and the theoretical distinction between religious beliefs and behaviours	19 items Beliefs subscale ($\alpha = 0.66$) Behavioural Practices Subscale ($\alpha = 0.81$) American Muslims ($n = 71$)	<ul style="list-style-type: none"> +ve: Correlated positively and moderately with a single-item self-rated religiousness measure. Some evidence of construct validity. -ve: Low reliability of the Beliefs subscale, small sample size, and vague construct conceptualisation.
The Islamic Religiosity Scale	Tiliouine, Cummins, and Davern (2009)	Assesses the relationship between Islamic religiousness, subjective well-being, and health	11 items Religious Practices subscale ($\alpha = .77$) Religious Altruism subscale ($\alpha = 0.62$) Algerian Muslims ($n = 2,909$)	<ul style="list-style-type: none"> +ve: Have a strong positive relationship with subjective well-being. -ve: Vague construct conceptualisation. No evidence of construct validity.
The Islamic Doctrinal Orthodoxy	Ji and Ibrahim (2007)	Adapted Allport's Intrinsic-Extrinsic religious orientation concept and Batson's Quest Scale	8 items ($\alpha = 0.90$) Indonesian Muslim university students ($n = 381$)	<ul style="list-style-type: none"> +ve: Predicted personal practice of religious activities, independent of extrinsic, intrinsic, and quest religiousness. -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.
The Knowledge-Practice Measure of Islamic Religiosity	Alghorani (2008)	Multiple-choice items that reflect both Islamic knowledge and the adherence to Islamic practices	100 items ($\alpha = 0.92$) U.S. Muslim high school students ($n = 211$)	<ul style="list-style-type: none"> +ve: Good internal consistency. -ve: No evidence for criterion validity or predictive validity. Has many items.

(continued)

Table 1. A Summary of Religiosity Scales for use by Muslim Populations (Continued)

Scale	Authors	Framework	Details	Remarks
The Muslim Religiosity-Personality Inventory	Hamzah <i>et al.</i> (2006)	Religiosity as a representative of the <i>tawhidic</i> (divine unity), which consists of 2 “Islamic worldview” constructs and 2 “Religious personality” constructs	56 items Worldly Islamic Worldview ($\alpha = 0.83$) Spiritual Islamic Worldview ($\alpha = 0.67$) Ritual ($\alpha = 0.90$) Mu’amalat ($\alpha = 0.83$) Muslim youths from four states selected randomly in Malaysia ($n = 1,692$)	<ul style="list-style-type: none"> +ve: Robust theoretical framework. -ve: Designed for youth only, thus, did not fully address aspects that relate to the general understanding and practice of Islam as a way of life. Has many items.
The Psychological Measure of Islamic Religiousness	Abu-Raiya, Pargament, Mahoney, and Stein (2008)	Multi-item measure assessing different dimensions of Islam in 3 separate studies	59 items 7 subscales ranged from $\alpha = 0.77$ to 0.97 Muslims in Israel and the United States Study 1: $n = 25$ Study 2: $n = 64$ Study 3: $n = 340$	<ul style="list-style-type: none"> +ve: Desirable variability, and discriminant, convergent, predictive, and incremental validity, using multiple mental and physical health criterion variables. -ve: Many items. Needs more testing in various settings to confirm applicability, reliability, and validity.
The Muslim Experiential Religiousness	Ghorbani Watson, Geranmayepour, and Chen (2014)	Based on the concept of religious consciousness, i.e., a loving submission and closeness to God	15 items ($\alpha = 0.90$) Iranian students from Universities and Islamic seminaries in or near Tehran ($n = 627$)	<ul style="list-style-type: none"> +ve: Good reliability and evidence for validity in multiple studies. -ve: Measures spirituality and religiousness - two distinct constructs from religiosity.
The Five Dimensions of Muslim Religiosity Scale	El-Menouar, (2014)	Based on Glock’s multidimensional concept of religiosity	22 items 5 subscales ranged from $\alpha = 0.64$ to 0.90 . Muslims living in selected German cities ($n = 228$)	<ul style="list-style-type: none"> +ve: Some evidence of validity and reliability. -ve: Low reliability of the Orthopraxis subscale. Adapted and extended a Christian instrument or Western concepts to Muslim populations.
The Muslim Daily Religiosity Assessment Scale	Olufadi (2016)		21 items ($\alpha = 0.89$) 3 subscales ranged from $\alpha = 0.76$ to 0.82 . Muslim students from two Nigerian universities Study 1: $n = 368$ Study 2: $n = 160$	<ul style="list-style-type: none"> +ve: Validated through exploratory and confirmatory analyses. Evidence for convergent, discriminant, and predictive validity in multiple studies. -ve: Focuses only on the externalisation of religious behaviour.

scale that is grounded on a robust Islamic theoretical framework that goes beyond the knowing and behavioural manifestations of religiosity with better item reliability and efficiency is warranted, and the current study was conducted to address this need.

Theoretical Framework. The term *religion*, which originates from the Latin word “*religare*”, means to tie or bind fast (Online Etymology Dictionary, 2016). From the perspective of Islam, religion is the bond between God as the Ultimate Reality and His creations, with humans being one of the creations. It is a way of life (*al-din*) or path (*tariqat*) with God as the anchor that encompasses the sum total of a Muslim’s work, faith, and being. In Islam, the most valuable source that provides a comprehensive description of *al-din* is

contained in a *hadith* known as “*Hadith Jibri*” (Sahih al-Bukhari, Vol. 6, Book 60, Number 300, *Hadith* 47). This *hadith* is important because it describes *al-din* as a concept with three essential constituents. The first is *islam*, which covers one’s religious obligations signified by acts of worship; the second is *iman*, which represents the cognitive and belief system in the understanding of God; and third, *ihsan*, which represents the actualisation of moral and spiritual excellence. These three concepts are not separate but connected to and necessary for each other to become a balanced and religious person (see Figure 1). This view is implicit in the writings of past Muslim scholars and researchers such as Al-Qardhawi (1985), Hawwa (1989), and Yassin (2001) who consider the intimate relationship between these three concepts. In essence, it can be argued that *al-din* or religion in Islam

is treated as unidimensional in nature, and researchers, therefore, are recommended to test their theories on this basis appropriately.

While the word *Islam* literally means submission to anything having power over the person, in Islam, it specifically refers to obedience to Allah SWT. Based on Figure 1, a person can submit to God at three levels. At the first level, *islam*, this is done via works or religious practices such as worship and rituals (e.g., performance of prayers [*salat*], fasting [*sawm*], alms [*zakat*], pilgrimage [*hajj*]), and other social obligations. The *iman* level involves understanding and beliefs in God, his prophets, angels, scriptures, and resurrection. The final level, *ihsan*, in contrast to the previous levels, is the inner dimension where a person performs supererogatory acts of worship in his/her devotion to Allah SWT. This can be seen as a spiritual transformation from the exoteric to the esoteric with the goal of being an *insan kamil* (a perfect or universal human) or the actualisation of virtue and goodness, in line with the role that God has decreed for humans. *Ihsan*, therefore, is the highest level that could be attained by a person, and by achieving it, a Muslim is assumed to have totally submitted. In other words, total submission or obedience is possible only when

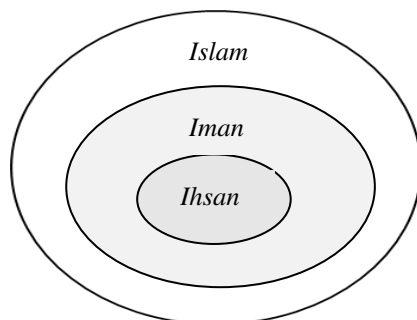


Figure 1. Three Levels of Al-din (Religion) based on Hadith Jibril

one knows the facts of one's existence and has firm faith based on knowledge and conviction.

Against this backdrop, it can be argued that the definition of religion and, by extension, religiosity, emphasises the bodily action or human activity (*islam*), the mind or understanding of God (*iman*), and the spirit or actualisation of virtue and goodness (*ihsan*). On the basis of this framework, the construct of “religiosity” for the scale developed in this study is measured by items assessing various aspects of a person's *islam*, *iman*, and *ihsan*. Our framework differs from previous work in that (1) we have constructed, developed, and interpreted our scale within the framework of an Islamic religious perspective rather than adapting from a secular or Western scale; (2) we have focused not only on religious practice and belief, but also included the inner dimension of actualisation of virtue; and (3) we have grounded the framework in a theorisation of *islam*, *iman*, and *ihsan*, that enable us to avoid developing redundant items; hence, overcoming a common drawback of the existing scales.

2. Methods

We followed a rational approach to scale development (Clark & Watson, 1995), which required the identification of salient concepts or dimensions, inspection of items from existing scales, writing sets of items for the new instrument, and validating the instrument through field-testing. First, the concepts and items of this scale were identified after consultation with subject matter experts and informed by the review of literature relating to religiosity (Study 1). Next, scale refinement was conducted based on data of 195 employees from a matriculation centre (Study 2). The scale was then validated in two studies with a sample of academic and administrative staffs from a local university ($n = 183$;

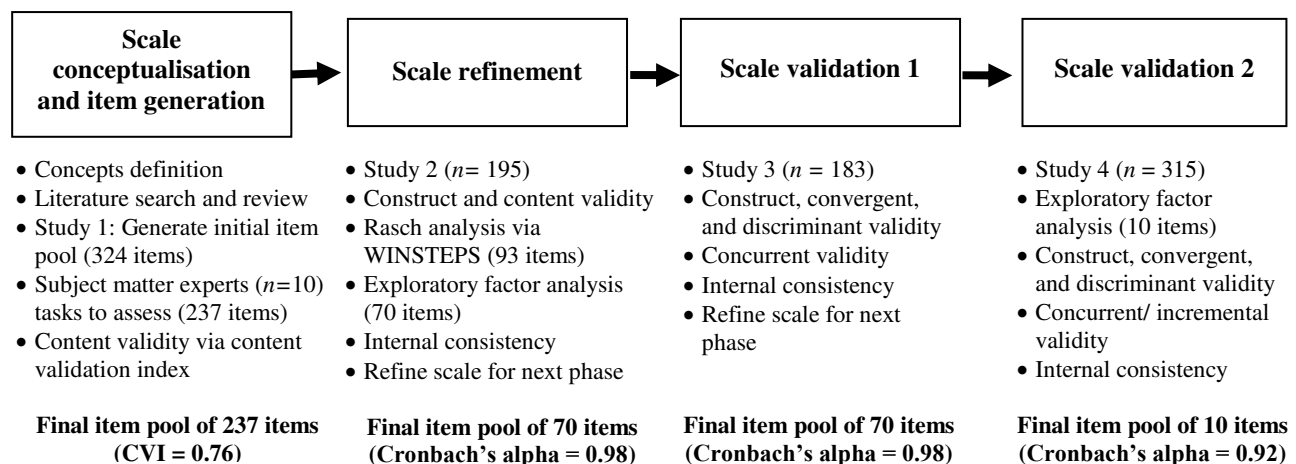


Figure 2. Scale Development Procedures

(Study 3), and a sample of employees from the same university but who were not involved in the previous studies ($n = 315$) (Study 4). Each of these studies was elaborated in the subsequent section. Figure 2 summarises the scale development procedures used in these studies.

3. Results and Discussion

Study 1: Scale Conceptualisation and Item Generation.

The development of any scale typically starts with a theoretical basis that could explicitly define “the phenomenon to be measured and its sub-components” (Joint Research Centre-European Commission, 2008, p. 22). As discussed in the previous sections, the three concepts outlined in *Hadīth Jibril* are assumed to be the defining features of Islam as a religion and is one way of conceptualising and framing work in religiosity. Following this framework, we define religiosity as encompassing the three levels of religion: (1) the bodily action or human activity (*islam*), (2) the mind or understanding of God (*iman*), and (3) the spirit or actualisation of virtue and goodness (*ihsan*).

Using this conceptualisation as a basis, we used a multi-source approach to generate items related to each of the three concepts (i.e., *islam*, *iman*, and *ihsan*). First, we conducted a literature review that incorporated sources such as the Qur’ān, ḥadīths, writings of Muslims scholars, and existing religiosity scales. This step was taken to understand how the variable was defined in the literature and how many dimensions it contained. A total of 324 items with four response options (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree) were generated through this procedure. *Islam* items were the most ...? (i.e., 162) because this concept could be directly measured and validated due to its dependency on the external behaviour. The proportions for *iman* (i.e., 113) and *Ihsan* (i.e., 49) items were lower because these two concepts were considered more internal, involving cognition and affect that were subtle or indirect to tap on.

Next, we consulted 10 subject matter experts with the academic background of a double degree in Human Sciences and Islamic Revealed Knowledge, a degree in Islamic Revealed Knowledge, a degree in Human Sciences, and a tertiary degree in Islamic Studies to rate how essential the items were to measure the construct of the scale. These experts, all of whom fulfilled the criteria of expert panel members to sit in a content review process set by the American Educational Research Association in terms of relevant training, experience, and qualifications (Germain, 2006), were given adequate time to provide their ratings and received monetary honoraria upon task completion. These experts assigned ratings to each of the items by indicating whether each aspect measured by the items

was *essential*, *useful but not essential*, or *not necessary* (Cohen, Swerdlik, & Sturman, 2013). We expected the items to have some content validity if more than half of the panellists rated them as *essential*. Both content validity ratio (CVR) and content validity index (CVI) (Lawshe, 1975) were calculated for each item. Using the CVR cut-off of 0.60, a total of 237 items was retained, and a CVI of 0.76 was drawn. Operationally, this showed a high percentage of overlap between the test items and the religiosity construct; suggesting a satisfactory content validity for the scale.

Study 2: Scale Refinement. The 237 items selected after the content validation exercise were refined using the Rasch analysis via WINSTEPS software (Linacre, 2006) performed on 195 staff (Academic = 63.0%; Administrative = 37.0%), with the age ranged from 20-60 years old ($M = 36.7$, $SD = 7.9$). Results showed an excellent person reliability coefficient (i.e., 0.96; demonstrating that the person’s ordering/hierarchy would be replicated with a high degree of probability if the measured sample were to be given a similar set of items), good person separation index (i.e., 4.80; indicating that the items on the religiosity scale could separate persons with different levels of religiosity), and little disordering of the step calibrations or thresholds. Additionally, the Rasch dimension explained 82.6% of the variance in the data, with the first contrast in the residuals explained only 1% of the variance, which was what would be observed in data that would fit the Rasch model. Given this amount of variance in the first contrast, it was evident that there was no secondary dimension measured by the items on this scale; hence demonstrating unidimensionality. Mean-while, the item-responder map (i.e., Wright map) generated by the Rasch model was used as a quick visual inspection to evaluate our construct definition. Using this map (see Appendix), only items that were above the mean were selected, and problematic items such as those that were not able to discriminate, those with very low coefficient values, those that did not fit the model (misfit), and those with notable differential item functioning were dropped. After all these procedures were taken into account, 93 items were selected.

We then used the maximum likelihood analysis with Promax rotation to factor analyse these 93 items. Linacre (1998) argued that conducting a factor analysis after a Rasch analysis would allow the off-dimensional factors (i.e., residuals of those parts of the observations not explained by the Rasch dimension) to be investigated and for this reason, an exploratory factor analysis was carried out. In this study, Promax was used as the rotation procedure as we expect the factors to correlate. The results demonstrated only one factor, and it explained 35.14% of the variance in the data. As suggested by Stevens (2002) and Field (2009), only items with a factor loading of 0.50 and above were

chosen for inclusion in the refined scale. Using this cut-off value, 70 items were identified and the Cronbach's alpha was then computed, yielding a coefficient of 0.98, indicating good internal consistency between the items in the refined scale. Since the results of both the Rasch and exploratory factor analyses yielded a single factor structure with adequate content and construct validity, stability, and internal consistency for the proposed scale, a structural equation modelling for confirmatory factor analysis was not required (Ho & Lee, 2011), and thus not conducted in the subsequent validation studies.

Study 3: Scale Validation 1. The purpose of this phase of the study was to establish the construct and criterion-related validities of the 70 items scale. We used a new sample of 183 employees consisting of 19.3% academic staff and 70.4% administrative staff. Within this sample, 62 were males, 117 were females, and four did not indicate their gender. The mean age for the total sample was 37.7 years ($SD = 8.9$ years).

For a scale to have construct validity, it must demonstrate an association between the test scores and the prediction of a theoretical trait, and to do so, it must show evidence of both convergent validity (i.e., where measures of similar theoretical constructs are expected to be related to each other or converge together) and discriminant validity (i.e., where measures of dissimilar theoretical constructs should not be related to each other or the extent to which they differ; Cohen, Swerdlik, & Sturman, 2013). To achieve this aim, our new scale was validated by evaluating it against four existing scales - these scales were published in scientific journals for use in the public domain; therefore, permission to use them were granted for non-commercial research.

To test the convergent validity of the refined instrument, we examined the correlations between our newly developed religiosity scale with two established religiosity scales: the Muslim Attitude towards Religiosity Scale (MARS;

Wilde & Joseph, 1997), and the UPM Religious Personality Scale (RUPM; Hamzah, *et al.*, 2006). Both scales had been used as measures of religiosity, similar to our 70 items scale. As expected, significant positive correlations were found between our scale and the two scales; correlations between our scale and RUPM was $r = 0.39$, $p < 0.01$, and between our scale and MARS was $r = 0.44$, $p < 0.01$. The magnitude of the correlation coefficients was also not too large, with shared variances of 15% and 19%, indicating that our scale measured something related to, but also sufficiently unique from, each of the two criterion measures. To examine discriminant validity, we correlated our scale with a measure of antagonistic work behaviour (five items) from the On-the-Job Behaviour Scale by Lehman and Simpson (1992), and no significant correlation was observed, $r = -0.02$, *ns*. This result implied that the current scale measured a unique and distinct construct from that assessed by the antagonistic work behaviour scale; hence, establishing its discriminant validity.

Concurrent validity was measured by correlating our scale with several existing measures of work-related behaviours. Using the six-item Organisational Commitment Scale (Marsden, Kallaberg, and Cook, 1993), the three-item Job Satisfaction Scale (Cammann *et al.*, 1979), and the 17-item of On-the-Job Behaviour Scale (Lehman and Simpson, 1992), the results showed that our religiosity scale was positively and significantly correlated with organisational commitment, $r = 0.23$, $p < 0.01$, job satisfaction, $r = 0.18$, $p < 0.05$, and positive work behaviour, $r = 0.31$, $p < 0.01$, but was negatively correlated with psychological withdrawal behaviour, $r = -0.11$, $p < 0.05$. No significant correlation was observed between the scale and physical withdrawal behaviour, $r = -0.08$, *ns*. These results indicated that our scale had some criterion-related validity as measured by concurrent validity.

Table 2. The 10 items with their Factor Loadings

Items ($\alpha = .92$)	Concept	Factor Loadings
I strive for both worldly affairs and the hereafter as advised by Prophet Muhammad (SAW).	<i>Iman</i>	0.778
I avoid behaviour that will be punished in the hereafter.	<i>Iman</i>	0.774
The more knowledge I have, the more humble I should become.	<i>Iman</i>	0.769
I teach my family members the greatness of Allah.	<i>Islam</i>	0.757
I feel bad doing something forbidden even if I know others are also doing it.	<i>Ihsan</i>	0.733
I strive to follow my <i>aql</i> (rationality) more than my <i>nafs</i> (lust).	<i>Iman</i>	0.716
I am pleased with what I have.	<i>Ihsan</i>	0.705
For fear of Allah I will always tell the truth.	<i>Ihsan</i>	0.678
I teach my family members to always remember Allah.	<i>Islam</i>	0.675
At any point of time in life, I can strengthen my relationship with Allah.	<i>Iman</i>	0.665

Taking these results altogether, the refined scale has been shown to have content validity (i.e., the extent to which a measure adequately represents the defined domain of interest that it is designed to measure) and construct validity (i.e., the extent to which a measure agrees with the theoretical constructs), as well as demonstrates the evidence of criterion-related validity (i.e., concurrent validity) with a good internal consistency (i.e., the Cronbach alpha = 0.98).

Study 4: Scale Validation 2. The objectives of the second validation study were to reduce the number of items in the 70-item scale and to confirm the structure of this shortened version by establishing its convergent, discriminant, and concurrent validity. To achieve these objectives, we used a new sample of 315 employees at a local university, consisting of 39.4% males and 60.6% females. The mean age of the total sample was 37.7 years ($SD = 10.1$).

We used factor analysis to reduce the number of items, and this was carried out as follows. First, we examined the inter-item correlation matrix among the 70 items, and Bartlett's test of sphericity suggested that the correlation matrix was significant (chi-square = 17611.33, $p < 0.0001$) and the Kaiser-Meyer-Olkin test showed that the sample size relative to the number of items was sufficient ($KMO = 0.956$). The measures of sampling adequacy statistics also showed that the correlations among the individual items were strong enough to suggest that the correlation matrix was factorable. Second, we identified items with inter-item correlations of 0.65 and based on this exercise, 36 items remained. We then factor-analysed these items and took the top 10 highest loading items. We factor analysed

these 10 items and the screen plot clearly indicated one factor explaining for 57.42% of the variance. Table 2 shows these 10 items, the concepts that they represent, and their factor loadings. These 10 items, with a Cronbach alpha value of 0.92, formed the shortened final scale that was used in the subsequent analyses.

To test for the construct validity of this 10-item scale, we examined its correlations with the Muslim Attitudes towards Religiosity Scale (MARS; Wilde & Joseph, 1997) and with antagonistic work behaviour scale (Lehman & Simpson, 1992). The former tested the convergent validity of the final scale against a religiosity scale that was regularly used in the West but developed without a proper Islamic framework. To have a convergent validity, our scale must be strongly and positively correlated with MARS. In contrast, we would expect very weak or zero correlation between our scale and antagonistic work behaviour scale because these two measures tap on different constructs, i.e., religiosity versus counter-productive work behaviour, respectively. As expected, results showed a positive and highly significant correlation between our religiosity scale and MARS ($r = 0.66$, $p = 0.0001$). On the other hand, the association between our religiosity scale and antagonistic work behaviour was weak ($r = -0.13$, $p = 0.018$). These results indicated that our shortened religiosity scale had a construct validity (see Table 3).

However, because of the sizeable amount of overlap between MARS and our scale, i.e., 43.56% shared variance, an important question that arose was whether our religiosity scale was unique and distinct enough to warrant it to be considered as a new measure. We used a

Table 3. Means, Standard Deviations, and Intercorrelations of Measures

Measures	Mean	SD	α	1	2	3	4
Revised Religiosity Scale	36.77	3.78	0.92				
MARS	62.33	5.56		0.66*			
Antagonistic Work Behaviour	13.87	6.50		-0.13+	-0.16*		
Organisational Commitment	19.30	2.75		0.45*	0.41*	-0.22*	
Integrity	66.40	9.35		0.30*	0.34*	-0.11+	0.36*

* $p < 0.01$, + $p < 0.05$

Table 4. Incremental Validity of the Religiosity Scale over MARS in Predicting Organisational Commitment, and Integrity

	Organisational Commitment			Integrity		
	ΔR^2	SE B	β	ΔR^2	SE B	β
MARS	0.167***	0.14	0.409***	0.113***	0.50	0.336***
Religiosity Scale	0.057***	0.18	0.315***	0.012*	0.66	0.146*
Final model	$F(2, 312) = 44.79$, $p < 0.0001$			$F(2, 312) = 22.22$, $p < 0.0001$		

*** $p < 0.0001$, ** $p < 0.01$, * $p < 0.05$

Note: β = standardised regression coefficient

hierarchical regression to examine if our scale could help explain the additional variance over and above MARS in the prediction of two work performance outcomes: organisational commitment (Marsden, Kallaberg, & Cook, 1993) and integrity (Schlenker, 2008). Table 4 shows that our scale is indeed able to explain for additional variance over and above MARS in predicting integrity and organisational commitment. These findings, therefore, provided support that our 10-item scale had a concurrent validity to merit it as a new religiosity scale.

Despite the growing interest being shown in issues surrounding religion, empirical insights into the construct of religiosity among Muslim populations have remained debatable. The current study is an attempt to address this gap by developing and validating a new religiosity scale, which we have named as the IIUM Religiosity Scale (IIUMReIS). In that respect, the present study makes two important contributions. First, it provides a theoretical and empirical-based conceptualisation of religiosity as one, unidimensional construct that encompasses aspects of belief (*iman*), actions (*islam*), and actualisation of virtue and goodness (*ihsan*). Second, it provides evidence of the psychometric adequacy of the new scale by demonstrating that it is internally reliable, valid, and correlated predictably with a range of work performance variables. In particular, we have found that religiosity is positively correlated with workplace integrity and organisational commitment, but is negatively correlated, albeit weakly, with antagonistic work behaviour. Furthermore, relative to the MARS measure, our new scale has shown adequate incremental validity in predicting organisational commitment and integrity.

One of the major strengths of our scale lies in its short scale length and its simplicity to use, which may overcome the limitations of the previous Muslims religiosity scales. With the inclusion of *islam*, *iman*, and *ihsan* items, the scale allows a comprehensive assessment of the religious beliefs and practices of Muslims. Moreover, when used in combination with other organisational-related scales, it provides additional information that may promote positive personal development and spiritual growth in organisational settings. Our findings, therefore, lend further support to the role of religion in promoting positive behaviours at the workplace as well as in understanding behaviours that could impede work performance. Overall, these results suggest that this new scale is appropriate for measuring religiosity among Muslims.

In developing the IIUMReIS, the framework used is based on the authoritative *Ḥadīth Jibril*, with the three concepts of *islam*, *iman*, and *ihsan*, and items are generated to reflect these concepts. However, findings from our studies, particularly Study 2 and 4, have

shown only one factor present in the scale. This is no surprise considering that the three concepts are closely interrelated and difficult to distinguish. For example, Al-Qarhdawi (2000) noted the intimate relationship between knowledge and *iman* with spiritual growth (or *ihsan*) of a believer. In his earlier work, Al-Qarhdawi (1985) also listed the spiritual outcomes of *ihsan* such as spiritual tranquillity, being hopeful, love, steadfast, as well as morality, and highlighted the relationship between *iman* with various aspects of life such as economic, politics, social, education, and work performance. The concepts of *islam*, *iman*, and *ihsan* have also been used interchangeably to mean the same thing. For example, Hawwa (1989) used the term *islam* whereas Yassin (2001) used the term *iman* when talking about “things that nullify *syahadah*” [maybe a reference here?], implying that both *islam* and *iman* were used when explaining the act of entering or exiting from a specific religion.

While our new scale is founded on the concepts of *islam*, *iman*, and *ihsan* from “*Ḥadīth Jibril*”, it should be noted that this is not the only way of conceptualising religiosity in Islam. The study by Hamzah *et al.* (2006) utilised a *tawhidic* (divine unity) framework for their religiosity scale, consisting of an Islamic worldview (knowledge, beliefs, and understanding) and personality (worship). Other researchers may also explore the use of other theoretical framework based on other sources in the Islamic tradition to construct their own Islamic religiosity scale. In addition, while we welcome the use of this new scale to gauge personal religiosity among Muslims in relation to their performance at work, it is important to consider our findings in light of three limitations. First, the validation exercises for the scale have been carried out on samples from an Islamic academic institution. In future research, the association between religiosity and behaviours at the workplace has to be tested on employees from other Islamic and non-Islamic institutions of higher learning to see whether the current findings can be generalised beyond the samples used in this study. In addition, the field testing should extend to the non-academic work settings to further establish the external validity of the scale. Second, more research is needed to assess the extent to which the scale can predict other positive and negative workplace behaviours. And third, in the current study, our measurement of religiosity relies solely on self-report, which may be prone to response bias. Hence, future research in this area should consider other sources of data such as peer and supervisor performance ratings, which may provide more objective information.

Measuring religiosity comes with its own challenges, particularly because it has been viewed as comprising multiple concepts that might relate to one another in different ways. Many have tried to discover the best approach and tools in measuring it and different

frameworks have been used to conceptualise religiosity. While we make no claims for coverage of all relevant concepts, our findings do provide strong support for the unidimensionality (i.e., scale items representing a common underlying factor or construct) and psychometric properties (i.e., internal consistency, content, construct, convergent, discriminant, and concurrent/incremental validities) of our scale. Therefore, the newly developed scale can be used for self-assessment and continuous personal development, as well as serve as a guide to improving one's religiosity and spiritual growth.

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